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INTERNATIONAL APPLICATION NO.

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02 April 1999 (02.04.99)

TITLE OF INVENTION

PACKAGING WRAPPER WITH PERFORATIONS FOR OPENING

APPLICANT(S) FOR DO/EO/US

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Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 into English (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 into English (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
14. ☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☒ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☒ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information: Preliminary Examination Report (with amendments) and English translation of this report.

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PACKAGING WRAPPER WITH PERFORATIONS FOR OPENING

The invention relates to items comprising at least one product packaged using a flexible film.

There is known, for example from document EP-0 398 447 in figure 6, an item comprising a confectionery product packaged in a flexible film forming an enclosure containing the product. The film has a precut line.

Thus, the film can easily be torn by the consumer along the precut line to gain rapid access to the product. This type of packaging is advantageous. However, there is always a search to allow even swifter and simpler access to the product.

One object of the invention is to provide an item in which the product is appropriately protected by its packaging prior to opening but which offers swifter and simpler access to the product at the desired moment without an implement being needed.

With a view to achieving this object, there is provided, according to the invention, an item comprising at least one product and a flexible packaging film forming a sealed enclosure containing the product or products and an amount of gas, the film having a precut line, in which the amount of gas is chosen so that a consumer can grasp the item in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item causes the film to rupture instantaneously along the most part of the precut line.

Thus, the enclosure protects the product until it is deliberately opened by the consumer. When the consumer wishes to gain access to the product, applying pressure to and then bending the item cause the packaging to open along the precut line. This opening is

instantaneous. It also produces an attractive characteristic noise of the explosion type, due to the sudden release of the gas. The line of rupture produces clean well-defined opening edges.

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The item may further more have at least any one of the following features:

- the item is arranged in such a way that rupture occurs only along the precut line;
- 10 - with the film having a joining line contiguous with the precut line, the item is arranged in such a way that rupture occurs at least along the entire part of the precut line that lies away from the adjoining line;
- 15 - with the item having one longer dimension, the precut line extends in a plane perpendicular to this dimension;
- the item contains at least two products, the precut line extending opposite a space between the two products or two of the products;
- 20 - the item contains two products of approximately the same dimensions;
- the film has at least two superposed layers of material;
- 25 - the precut line extends mainly in one of the layers, with reference to a thickness of the film;
- the precut line extends through the entire thickness of one of the layers;
- the precut line extends in one of the layers defining an outer face of the item, preferably without extending into another of the layers defining an inner face of the item;
- 30 - the film has a layer of polypropylene in which the precut line extends;
- 35 - the film has a layer of polyethylene through which the precut line does not pass;
- the or each product is a food product, particularly a confectionery product.
- the or each product is frozen.

The item according to the invention, which allows very swift opening, is particularly well suited to containing a food product based on ice cream, the melting of which is speeded up throughout the time it is handled through conventional packaging.

The invention also provides a packaging method in which a sealed enclosure is produced using a flexible film, enclosing inside the enclosure at least one product and some gas, the film having a precut, and in which is enclosed an amount of gas designed so that a consumer can grasp the finished item in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item causes the film to rupture instantaneously along the most part of the precut line.

Advantageously, the film is shaped before the enclosure is closed, so as to enclose the amount of gas.

The invention also provides a packaging machine comprising means for producing a sealed enclosure from a flexible film and for enclosing inside the enclosure at least one product and some gas, the film having a precut, the machine being arranged to enclose in the enclosure an amount of gas designed so that a consumer can grasp the finished item in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item causes the film to rupture instantaneously along the most part of the precut line.

Other features and advantages of the invention will become further apparent from the following description of one preferred embodiment which is given by way of non-limiting example. In the appended drawings:

- figure 1 is a perspective view of an item

hot-sealing of the film onto itself could be envisioned. This layer 22 is local in that it covers only those zones of the inside 20 which are intended to be sealed to one another. In figure 2, this layer 22 has been illustrated for greater clarity, but is not in fact present at the location of the section. The lacquer 16 makes sure that the layers 12 and 18 bond together. The various elements of which the film 4 is made and the various techniques applied to this film are known per se and will not be described here.

The film 4 has a precut line or line of weakness 24. This line 24 here extends in a plane perpendicular to the longitudinal direction of the item 2, mid-way between its two longitudinal ends 10. The line 24 has been illustrated in dotted line in figures 1, 3 and 6 for greater clarity but is in fact barely visible on the item 2. The precut line 24 here extends only through the thickness of the outer layer 12 and remains distant from the inner layer 18 which remains intact. The precut line here extends through the entire thickness of the outer layer 12, from the outside face 14, as far as the lacquer 16. As illustrated by figures 1 and 6, it extends across practically the entire width of the film 4, stopping just short of each of the longitudinal edges 6 prior to their sealing, so as to slightly penetrate the longitudinal joint 8 after sealing around the finished item. However, it could be contrived for the precut line to extend into the joint 8 but not to be operative in the joint 8 for opening the item. The precut line 24 is produced by laser using a technique known per se and, for example, using the techniques described in documents E-P0 357 841 and EP-0 398 447.

In this particular instance, the item 2 contains two mutually identical products 26. In this case they are chocolate-coated confectionery products based on ice cream in the form of bars. The two bars 26 have their

length parallel to the length of the item 2 and extend one after the other along this length and on each side of the plane of the precut line 24 which thus forms a plane of symmetry for the two bars 26 and for the item.

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The sealed enclosure formed by the film 4 contains the two products 26 and a certain amount of gas which, in this instance, is air. As a preference, this amount of gas will not be so great as to give the item a wholly distended shape. Thus, the shape of the bars 26 can still be partially made out under the flexible film 4 which remains partially in contact with the bars.

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To open the item 2, the consumer has the option of grasping it in both hands near its respective longitudinal ends 10, as illustrated in figure 3, leaving the central section 28 of the item 2 free, in the same way as he would grasp a stick with a view to bending or even breaking it. The amount of gas in the enclosure is great enough that grasping the item in the hands by its longitudinal end portions causes the central section 28, which has the precut line 24 and which is left free, to distend simply under the pressure of the fingers. The distending does not consist in a local stretching of the film which, incidentally, does not need to be elastic. It is simply a matter of significant local tension occurring in the film in the region of the central portion 28. The central distending occurs because the gas driven from the ends 10 of the item 2 by the compression exerted by the fingers fills the central section of the enclosure and because this grasping in the hand causes a slight increase in the pressure of the gas inside the enclosure which causes the film to be tensioned around the precut line. In fact, the consumer compresses the gas, by a small amount, without intending to do so, simply by grasping the item in his hands. As a preference, the item will be grasped with the longitudinal joint 8 near the thumbs, that is to say

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towards the consumer's body.

At this stage, all the consumer needs to do is to begin a gesture which tends to bend the bar as if he wished to break it, away from his body. This gesture, barely begun, instantaneously causes the film 4 to rupture completely along the precut line 28, so that the consumer now has in his hands two half-items 2 each consisting of a half-enclosure open across its cross section and of a bar 26 which is accessible and visible through this opening.

The suddenness of this opening is due to the fact that the bending begun on the item produces, in the film, locally, near the zone 30 away from the consumer, an increase in tension which tends to move the two sides of the precut away from each other. These extremely localized stresses weaken this zone 30 and rupture the film at its point. The cut thus begun is then propagated along the entire precut line 28 as far as the longitudinal joint 8 where it is interrupted. However, pulling the two half-items 2 apart then allows the precut line to be ruptured very easily along its part which is not yet ruptured, including in the region of the joint 8 so that the two half-items can be completely separated as in figures 4 and 5.

The swiftness of opening depends both on the depth of the precut 24 and on the mechanical weakness of the film 4 in its part remaining to be ruptured before opening, in this case mainly the inner layer 18. In the current example, the precut outer layer 12 is the part of the film which provides most of the mechanical strength of the film. The inner layer 18, which is relatively weak, itself provides most of the imperviousness of the enclosure with regard to the frozen product and with regard to the gas. Note that this imperviousness is therefore maintained until the time of opening.

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As illustrated in figure 5, the configuration of the item after opening as two half-items 2 is attractive. It allows the two bars 26 to be handled without direct contact with them. The products can easily be shared
5 between two consumers. The two half-enclosures make hygienic consumption of the products easier by reducing contact with the fingers which hold the bars through the film. The sudden release of gas upon the opening of the item 2 produces an attractive, highly
10 characteristic exploding noise which is reproducible, which means that it may even allow the item to be recognized.

The film 4 is arranged in a way known per se to meet
15 the following conventional criteria:

- ability to be handled in a machine;
- compatibility with food products;
- printability;
- low cost; and
- 20 - sensory aspect (tactile, visual, etc.).

To manufacture the item, each layer 12 and 18 is laminated and manufactured separately. The two layers are then bonded using the lacquer 16. The film 14 is
25 then printed and locally receives the layer of adhesive 22. Rolled up on itself, it then forms a master reel, for example 1 meter wide. The master spool is then unrolled, the film is cut, then rolled up again into several slave spools (124 mm wide). The precut line 24
30 is produced by laser while the film is unrolled before being rolled up onto the slave spools. This precutting is at right-angles to the direction of unrolling of the film, in the outer layer 12.

35 Each slave spool is then used to package the bars 26 on a machine as illustrated in figure 6, of a general "form, fill and seal" type which is well known per se. The film 4 travels from left to right, adopting the shape of a U-shaped channel under the action of a

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shaper 32 which, for greater clarity, has been depicted
some distance from the film with which it is normally
in contact. The shaper 32 here is external, the film
being pressed against an inside face of the shaper to
5 give the enclosure its characteristic shape. The bars
26 drop into the not-yet-shaped film 4 upstream of the
shaper 32. Sealing rollers 31 seal the film onto itself
along its longitudinal edges 6. The shaper 32 in the
known way gives the profile of the enclosure a
10 voluminous shape, after the two bars 26 have been
introduced into the enclosure. Wheels 34 carrying
sealing and cutting tools and extending on each side of
the film seal and cut the tube formed by the film 4 at
the transverse ends 10 to seal them and separate the
15 finished items 2 from one another. A spotting member
34, known per se, arranged upstream of the rollers 31,
reads marks 36 on the film to make sure that the cut by
the wheels 34 is made at the correct location. The
amount of gas trapped in the enclosure on this occasion
20 depends in particular on the shape of the shaper 32 and
on the conditions under which the bars 26 are
introduced (drop height, etc.). It will be noted that
the deliberate trapping of a certain amount of gas in a
sealed package is known per se.

25 Of course, numerous modifications could be made to the
invention without departing from the scope thereof.

Thus, the packaged product could be any food product,
30 possibly not frozen, whether sweet or savory and
intended for human or animal (particularly pet)
consumption. The product could be a non-food object
such as a toy, a garment, a utensil, etc. The product
could be a consumable (in particular disposable after a
35 small number of uses) or a non-consumable.

The item could contain just one product. This could
have sufficient mechanical strength to withstand the
stress exerted on the packaging during opening. On the
other hand, provision could be made for the single

product to break upon opening, for example if the product is a chocolate bar.

The item may contain more than two products, for example three or four products. At least two precut lines 24 occupying different positions in relation to the products could then be provided so as to allow the consumer to open the item, as he chooses, nearer to one of the products (in the middle, near to one end, etc.).

The position of the precut line 24 could be altered so that it is in an off-centered position, near to one end, etc. Its orientation could be altered. Thus, its plane could be oblique, or even longitudinal. The precut line could be non-straight, that is to say angled.

The precut line could be made in just part of the thickness of the layer 12 so that over a fraction of its thickness this layer is not precut.

The precut layer could be produced so that it extends from the inside face of the film so as to be completely invisible from the outside of the item.

The film could comprise a single layer of a conventional type appropriately chosen. On the other hand, it could comprise three or more superposed layers.

The precut line could be interrupted before it reaches the longitudinal joint 8, or could even be in several discontinuous portions, the natural tendency of the film to separate under the effect of its orientation then possibly being able to take over at the ends of the precut portion or portions, upon opening.

The appropriate amount of gas enclosed in the enclosure could be introduced therein by an injection nozzle.

The enclosure could have varied shapes, for example could be cubic, flat (of the sachet kind), etc.

5 It is not necessary for the enclosure prior to opening to be completely impervious in respect to the gas. All that is required is that this imperviousness should allow the film to be tensioned by local compression with a view to opening it by bursting.

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CLAIMS

1. An item (2) comprising at least one product (26) and a flexible packaging film (4) forming a sealed enclosure containing the product or products and an amount of gas, the film having a precut line (24), characterized in that the amount of gas is chosen so that a consumer can grasp the item (2) in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item (2) causes the film (4) to rupture instantaneously along the most part of the precut line (24).
2. The item as claimed in claim 1, characterized in that it is arranged in such a way that rupture occurs only along the precut line (24).
3. The item as claimed in claim 1 or 2, characterized in that, with the film (4) having a joining line (8) contiguous with the precut line (24), the item is arranged in such a way that rupture occurs along at least the entire part of the precut line that lies away from the adjoining line.
4. The item as claimed in any of claims 1 to 3, characterized in that with the item (2) having one longer dimension, the precut line (24) extends in a plane perpendicular to this dimension.
5. The item as claimed in any of claims 1 to 4, characterized in that it contains at least two products (26), the precut line (24) extending opposite a space between the two products or two of the products.
6. The item as claimed in any of claims 1 to 5, characterized in that it contains two products

(26) of approximately the same dimensions.

7. The item as claimed in any of claims 1 to 6,
characterized in that the film (4) has at least
two superposed layers (12, 18) of material.

8. The item as claimed in claim 7, characterized in
that precut line (24) extends mainly in one (12)
of the layers, with reference to a thickness of
the film (4).

9. The item as claimed in claim 7 or 8, characterized
in that the precut line (24) extends through the
entire thickness of one (12) of the layers.

10. The item as claimed in any of claims 7 to 9,
characterized in that the precut line (24) extends
in one of the layers (12) defining an outer face
(14) of the item (2), preferably without extending
into another (18) of the layers defining an inner
face (20) of the item.

11. The item as claimed in any of claims 1 to 10,
characterized in that the film (4) has a layer of
polypropylene (12) in which the precut line (24)
extends.

12. The item as claimed in any of claims 1 to 11,
characterized in that the film has a layer of
polyethylene (18) through which the precut line
(24) does not pass.

13. The item as claimed in any of claims 1 to 12,
characterized in that the or each product (26) is
a food product, particularly a confectionery
product.

14. The item as claimed in any of claims 1 to 13,
characterized in that the or each product (26) is

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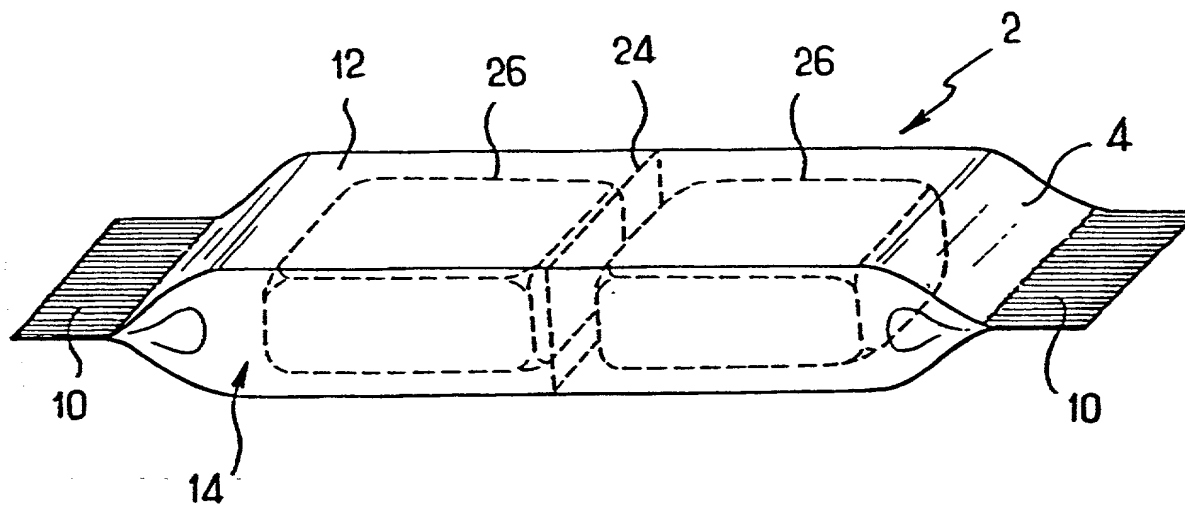
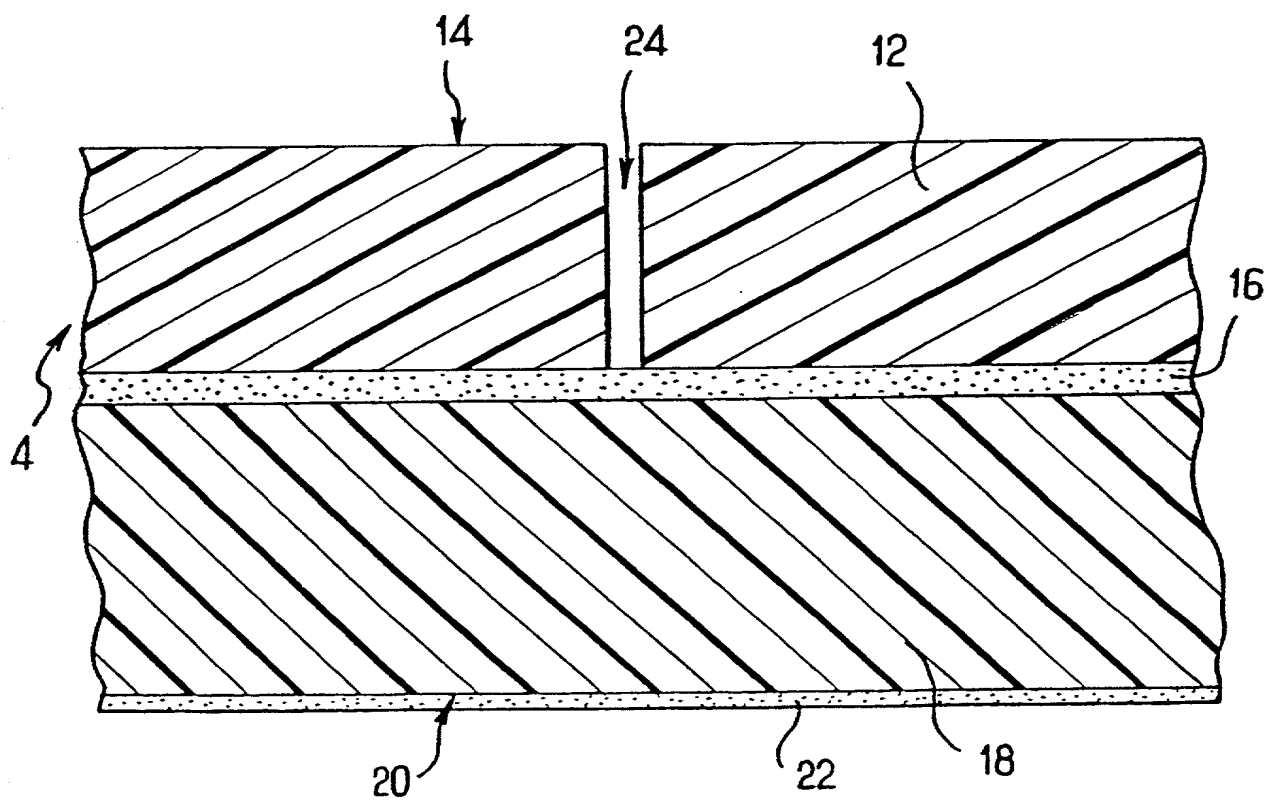
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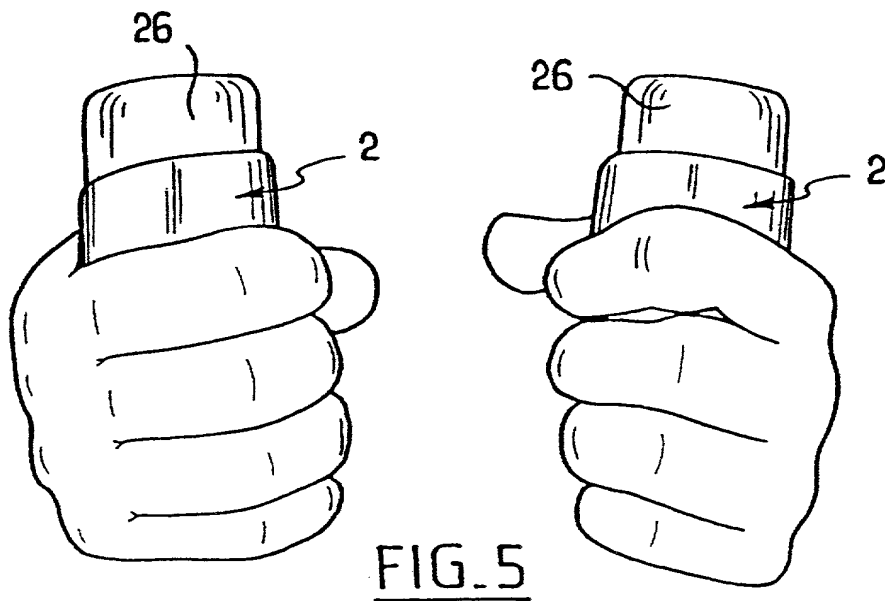
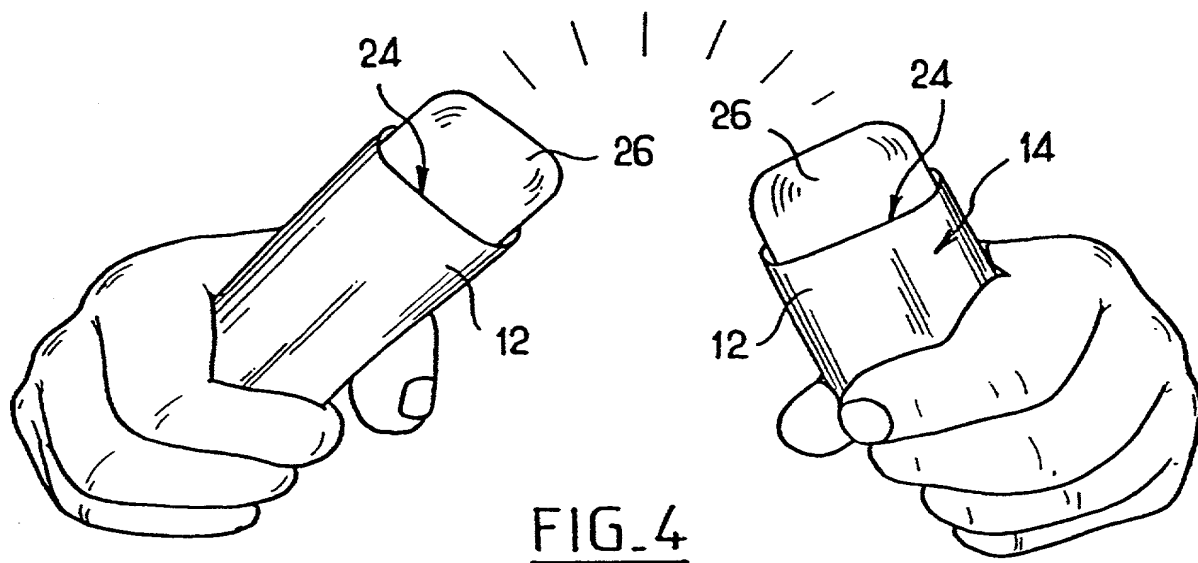
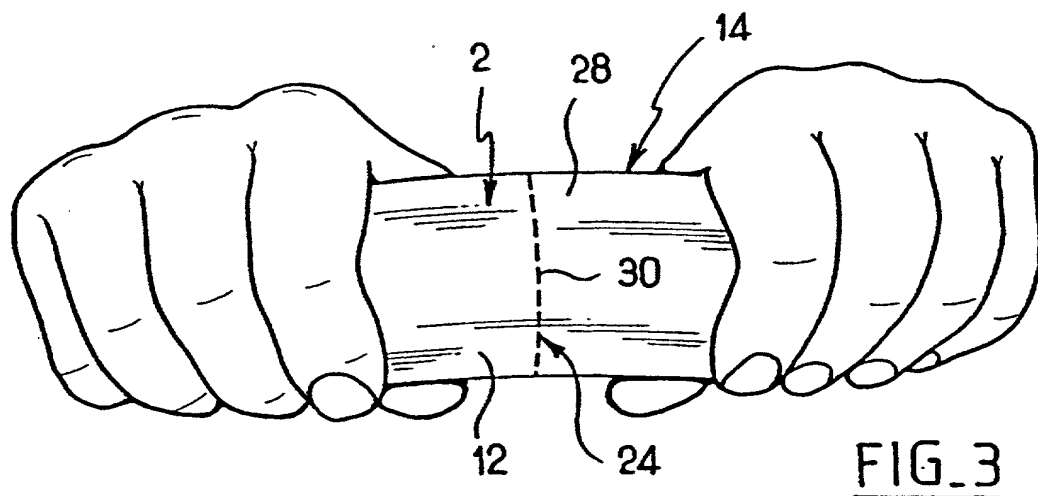
15. A packaging method in which a sealed enclosure is produced using a flexible film (4), enclosing inside the enclosure at least one product (26) and some gas, the film having a precut (24), characterized in that enclosed in the enclosure is an amount of gas designed so that a consumer can grasp the finished item (2) in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item causes the film (4) to rupture instantaneously along the most part of the precut line (24).

16. The method as claimed in claim 15, characterized in that the film (4) is shaped before the enclosure is closed, so as to enclose the amount of gas.

17. A packaging machine comprising means for producing a sealed enclosure from a flexible film (4) and for enclosing inside the enclosure at least one product (26) and some gas, the film (4) having a precut, characterized in that the machine is arranged to enclose in the enclosure an amount of gas designed so that a consumer can grasp the finished item (2) in such a way as to compress it so as to increase the pressure of the gas to such a point that bending the item causes the film (4) to rupture instantaneously along the most part of the precut line (24).

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FIG. 1FIG. 2



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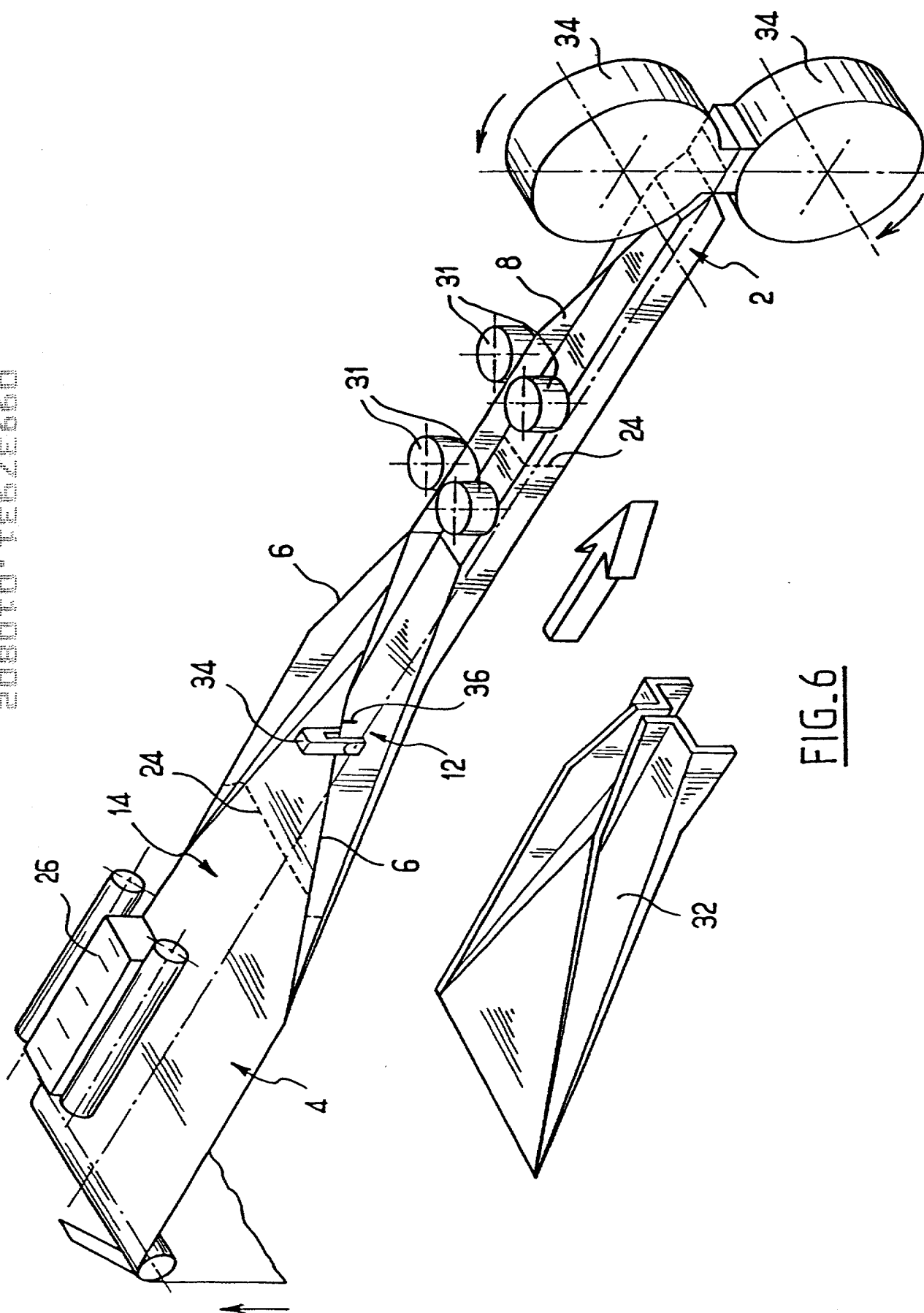


FIG. 6

**COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
(Page 1)**



As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled PACKAGING WRAPPER WITH PERFORATIONS FOR OPENING

the specification of which ☐ is attached hereto ☒ was filed on 31/03/00 as United States Application No. or PCT International Application No. PCT/FR/00/00820 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b), of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designates at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

<u>Country</u>	<u>Application No.</u>	<u>Filed (Day/Mo./Yr.)</u>	<u>(Yes/No)</u> <u>Priority Claimed</u>
France	FR99 04157	02/04/99	YES
France	FR99 04449	09/04/99	YES

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

<u>Application No.</u>	<u>Filed (Day/Mo./Yr.)</u>	<u>Status (Patented, Pending, Abandoned)</u>
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I hereby appoint the practitioners associated with the firm and Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to the address associated with that Customer Number:

FITZPATRICK, CELLA, HARPER & SCINTO
Customer Number: 05514

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
(Page 2)

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Full name of Sole or First Inventor WASBERG Marc
Inventor's signature Wasber
Date November 15, 2001 Citizen/Subject of FRANCE
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Post Office Address The same as residence

2-0
Full name of Second Joint Inventor, if any ROSA Véronique
Inventor's signature [Signature]
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Post Office Address The same as residence

3-0
Full name of Third Joint Inventor GMIDOT Catherine
Inventor's signature [Signature]
Date November 15, 2001 Citizen/Subject of FRANCE
Residence 10, rue Horace 67170 BRUMATH / FRANCE FRV
Post Office Address The same as residence

Full name of Fourth Joint Inventor _____
Inventor's signature _____
Date _____ Citizen/Subject of _____
Residence _____
Post Office Address _____

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